Multiconsult

Master Class on Sound Insulation in Buildings

Contents

The aim of the master class[1] is to provide the participants with a deeper understanding within three main areas of building acoustics: the physics of sound transmission, the measurement uncertainty in building acoustic measurements, and subjective evaluation of sound insulation. In addition, some time is devoted to discussion of the participants' own cases.

The sound transmission through thin and thick constructions is physically very different, and the reason for that will be explained. The sound insulation at low frequencies will be given special attention. Behind the theory, the participants are introduced to statistical energy analysis (SEA) and Rayleigh's method for calculation of the radiation efficiency of a vibrating surface. Sound insulation of windows and facades depends on the angle of incidence, and the transmission at grazing incidence is particularly interesting. Calculation models for Impact sound, floating floors and flanking transmission will be presented.

Measurement methods and the associated measurement uncertainty are mainly a matter of spatial averaging in rooms. Discrete averaging is preferred in some cases; in other cases the continuous averaging offers advantages. The conditions at low frequencies are very different from those at high frequencies, and it is explained how to estimate and how to apply the uncertainty of a sound insulation measurement.

In recent years, there has been an increasing research activity in the field of subjective evaluation of sound insulation, especially noise from neighbours. Laboratory experiments and field studies both have their advantages and drawbacks. We shall look into the methods applied for questionnaires and statistical analysis using the logit model. The results point at which level of sound insulation we should aim at in the future in order to achieve satisfactory sound insulation between dwellings.

Dates

The master class runs over two days, Friday and Saturday 13-14 April 2018, in connection with the Baltic-Nordic Acoustic Meeting, B-NAM 2018, 15-18 April 2018. https://euracoustics.org/eaa-societies/partner-societies/nordic-acoustics-association/bnam-2018

Location

The venue is one of the meeting rooms at Centerhotel Plaza, Aðalstræti 4 – 101, Reykjavík, Iceland. Accomodation may also be possible in the same hotel.
https://www.centerhotels.com/meetings/meeting-room-eyjafjallajokull/

For whom?

The master class is intended for acoustical consultants with experience in building acoustics and postgraduate students in acoustics. The participants are encouraged to bring one or two sound insulation cases of their own for discussion. Questions about the master class can be directed to: Jens Holger Rindel, (+47) 98 01 59 49), jens.holger.rindel@multiconsult.no

[1] A master class is a class given to students of a particular discipline by an expert of that discipline—usually music, but also painting, drama, any of the arts, or on any other occasion where skills are being developed. (From Wikipedia)

The master

Jens Holger Rindel is currently senior consultant at Multiconsult in Norway and senior researcher at Odeon A/S in Denmark. Until 2008, he was Professor in acoustics at the Technical University of Denmark. He is also past President of the Nordic Acoustical Association, and past Chairman of the Technical Committee for Building and Room Acoustics of the European Association of Acoustical Societies. He is a Fellow of the Institute of Acoustics and of the Acoustical Society of America.

Course material

The Master Class is based on the book: "Sound Insulation in Buildings" by Jens Holger Rindel: https://www.routledge.com/Sound-Insulation-in-Buildings/Rindel/p/book/9781498700412

The course will mainly deal with Chapters 6 through 15. After registration, a code will be provided, so the book can be ordered at a discount price. The participants should bring the book for the course.

Program

Friday 13 April 2018, 09:00 – 17:30

Bending and shear waves. Modal density. Sound radiation of forced and resonant vibrations in plates. Statistical Energy Analysis. Airborne sound transmission, single constructions, thick plates, low frequencies. Influence of angle of incidence. Double constructions. Impact sound and floating floors. Massive wood constructions. Flanking transmission.

Saturday 14 April 2018, 09:00 – 17:30

Measurement methods and spatial averaging. Measurement uncertainty. Dose-response relationships and subjective evaluation of sound insulation. Requirements for sound insulation between dwellings. Experimental buildings with high sound insulation. Discussion of cases from the participants.

Course fee

The course fee for attending the master class is 12 000,- NOK (excl. VAT, does not apply). This includes lunch and coffee/refreshments both days.

Registration

Please fill in the registration form and send by e-mail to: Shanzah A. Javaid, (+47) 21 58 52 70, Shanzah.javaid@multiconsult.no

The final registration date is 1 March 2018. Registration should be send as soon as possible. Registrations will be accepted in the order in which they are received up to a maximum of 20 participants. After registration, you will receive a confirmation. An invoice will be send in January 2018 or with the confirmation. The payment must be within 30 days after receipt of the invoice.

Cancellation

If you cancel the participation more than six weeks before the start, the course fee will be refunded. If you cancel within two to six weeks before the start, there will be a refund of 50 % of the course fee. If cancellation less than two weeks before the start, there will be no refund.

If there are not enough participants, Multiconsult has the right to cancel the Master Class up to four weeks before the start. In that case, the total course fee will be refunded.